

21. Assessment of the squid stock complex in the Gulf of Alaska

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Executive Summary

Squids in the Gulf of Alaska (GOA) are managed as a single stock complex comprising approximately 15 species. Historically, squids were managed as part of the Other Species complex. In 2011 a separate “in the fishery” category for the GOA squid complex was established, requiring annual catch limits for the squid complex. Harvest recommendations are based on historical catch. Because the GOA bottom trawl survey is the chief source of data for this assessment and is biennial, full assessments are performed only in odd years. In even years, an abbreviated report is published containing updated catch data.

Summary of Changes

Changes in the input data:

1. Total catch and retention data for GOA squids has been updated with complete 2011 and partial 2012 data (Tables 1-3).

Summary of Results

Because reliable estimates of squid biomass and natural mortality rate do not exist, we recommend using a modified Tier 6 approach setting OFL equal to maximum historical catch and ABC equal to $0.75 * \text{OFL}$ using the years 1997 - 2007 as a baseline. This approach has been recommended by the Plan Team and the Science and Statistical Committee for species with catch data from only recent years (e.g. GOA octopus).

Quantity/Status	<i>last year</i>		this year	
	2012	2013	2013	2014
<i>M</i> (natural mortality)	<i>n/a</i>	<i>n/a</i>	n/a	<i>n/a</i>
Specified/recommended Tier	6	6	6	6
Biomass	<i>n/a</i>	<i>n/a</i>	n/a	<i>n/a</i>
<i>average historical catch 1997-2007</i>	272	272	272	272
<i>maximum historical catch 1997-2007</i>	1,530	1,530	1,530	1,530
Recommended OFL (max. hist. catch; t)	1,530	1,530	1,530	1,530
Recommended ABC (0.75*OFL; t)	1,148	1,148	1,148	1,148
Status	<i>As determined last year for:</i>		<i>As determined this year for:</i>	
	2010	2011	2011	2012
Overfishing	<i>No</i>	<i>n/a</i>	No	<i>n/a</i>
Overfished	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>
Approaching overfished	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>
(for Tier 6 stocks, data are not available to determine whether the stock is in an overfished condition)				

Tables

Table 1. Estimated total catches of squid (t) in the Gulf of Alaska groundfish fisheries, 1990-2012 (1990 is the earliest year for which GOA squid catch data are available). Table also includes annual TACs for the Other Species complex and estimated Other Species catch, 1990-2010. "Squid %" shows the percentage of squids in the total Other Species catch.

	squid catch (t)	Other Species catch (t)	Other Species TAC (t)	squid % of Other Species	management method
1990	60	6,289		1%	Other Species TAC
1991	117	5,700		2%	Other Species TAC (incl. Atka)
1992	88	12,313	13,432	1%	Other Species TAC (incl. Atka)
1993	104	6,867	14,602	2%	Other Species TAC (incl. Atka)
1994	39	2,721	14,505	1%	Other Species TAC
1995	25	3,421	13,308	1%	Other Species TAC
1996	42	4,480	12,390	1%	Other Species TAC
1997	97	5,439	13,470	2%	Other Species TAC
1998	59	3,748	15,570	2%	Other Species TAC
1999	41	3,858	14,600	1%	Other Species TAC
2000	19	5,649	14,215	0%	Other Species TAC
2001	91	4,804	13,619	2%	Other Species TAC
2002	43	3,748	11,330	1%	Other Species TAC
2003	97	6,266	11,260	5%	Other Species TAC
2004	162	1,705	12,942	10%	Other Species TAC (no skates)
2005	636	2,513	13,871	25%	Other Species TAC (no skates)
2006	1,530	3,881	13,856	39%	Other Species TAC (no skates)
2007	416	3,035	4,500	14%	Other Species TAC (no skates)
2008	98	2,967	4,500	3%	Other Species TAC (no skates)
2009	345	3,188	4,500	11%	Other Species TAC (no skates)
2010	139	1,724	4,500	8%	Other Species TAC (no skates)
2011	238	n/a	n/a	n/a	squid complex
2012*	20	n/a	n/a	n/a	squid complex

Data sources and notes: squid catch 1990-1996, Gaichas et al. 1999; squid catch 1997-2002, AKRO Blend; squid catch 2003-2012, AKRO CAS; Other Species catch, AKRO Blend and CAS; TAC, AKRO harvest specifications. Other Species catch from 1990-2003 does not include catch of skates in the IFQ Pacific halibut fishery, and after 2003 includes no skate catch at all.

*2012 catch data are incomplete; retrieved September 28, 2012.

Table 2a. Estimated catch (t) of all squid species in the Gulf of Alaska combined by target fishery, 1997-2002. Data source: AKRO Blend.

target fishery	1997	1998	1999	2000	2001	2002
deep flatfish	5	3	6	1	1	1
flathead sole	1	0	0	0	1	0
other target	14	0	0	0	0	0
Pacific cod	1	1	1	0	1	0
rex sole	1	1	4	2	3	1
rockfish	8	6	7	7	9	7
sablefish	0	0	2	0	0	0
shallow flatfish	0	0	0	0	0	0
arrowtooth	1	3	1	1	2	7
pollock	66	46	20	7	74	28
total	97	60	41	18	91	44

Table2b. Estimated catch (t) of all squid species in the Gulf of Alaska combined by target fishery, 2003-2012. Data source: AKRO CAS. *2012 data are incomplete; retrieved September 28, 2012.

target fishery	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012*
walleye pollock	68	145	632	1,518	410	92	321	129	209	5
arrowtooth										
flounder	3	1	2	1	2	0	7	2	16	0
rockfish	9	12	2	10	3	5	14	4	12	15
rex sole	2	0	0	0	0	0	2	3	1	0
sablefish	0	4	0	0	0	0	0	0	0	0
Pacific cod	14	0	0	0	0	0	0	0	0	0
deepwater										
flatfish	0	1	0	0	0	0	0	0	0	0
shallow flatfish	0	0	0	0	1	0	1	0	0	0
GOA total	97	162	636	1,530	416	98	345	139	238	20

Table 3. Estimated catch (t) of all squid species in the Gulf of Alaska combined by NMFS statistical area, 1997-2012. Data sources: 1997-2002, AKRO Blend; 2003-2012, AKRO CAS. *2012 are incomplete; retrieved September 28, 2012.

	NMFS statistical area							total
	WGOA	CGOA		EGOA				
	610	620	630	640	649	650	659	
1997	46	4	36	2	6	4	0	98
1998	18	8	21	3	9	0	0	59
1999	6	11	14	2	8	0	0	41
2000	7	2	8	2	0	0	0	19
2001	19	54	17	1	0	0	0	91
2002	19	12	10	1	0	0	0	42
2003	19	43	13	2	20	0	0	97
2004	15	129	11	2	5	0	0	162
2005	13	607	11	2	3	0	0	636
2006	12	1,485	14	5	14	0	0	1,530
2007	3	403	5	0	0	0	0	412
2008	4	77	2	0	0	0	0	84
2009	12	315	10	1	7	0	0	345
2010	3	121	5	2	8	0	0	139
2011	8	201	18	4	7	0	0	238
2012*	5	4	5	2	4	0	0	20